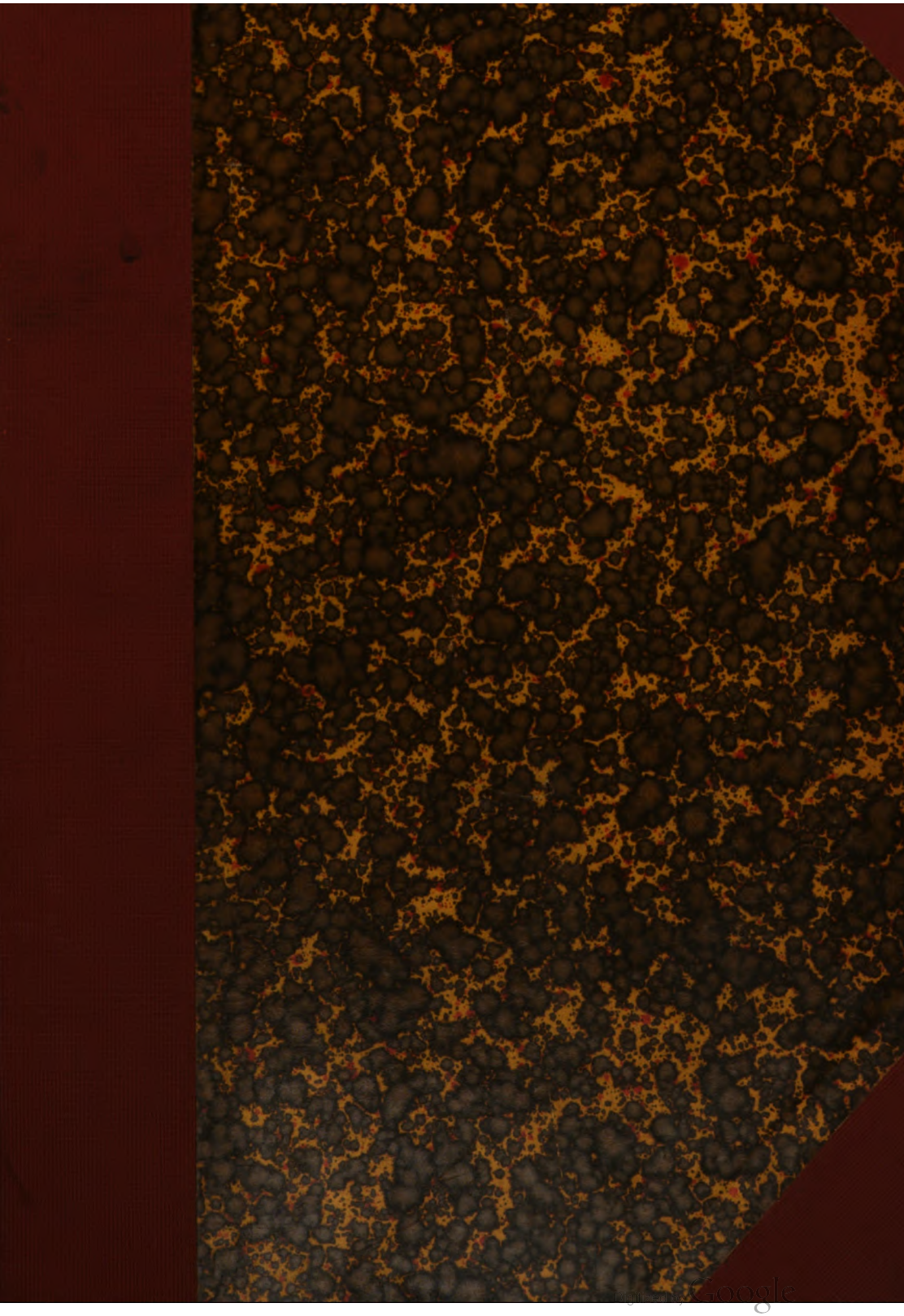

TORREYA

A Monthly Journal of Botanical Notes and News

JOHN TORREY, 1796–1873

EDITED FOR

THE TORREY BOTANICAL CLUB

BY

NORMAN TAYLOR

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ERRATA, VOLUME XII

Page 51, 4th line from top, read *officinale* for *officinalis.*
Page 228, 3d line from bottom, read *breeding* for *breedong.*
Page 256, 3d line from top, read *Blakeslee* for *Blakslee.*
Page 266, 9th line from bottom, read *Aconitum* for *Aconitium.*
Page 268, 7th line from top, capitalize *Hydrastis* and *Berberis.*
Page 276, 4th line from top, read *G. H. Shull* for *G. A. Shull.*
Page 276, 7th line from bottom, read *Roland Thaxter* for *R. B. Thaxter.*

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TORREYA

January, 1912

Vol. 12 No. 1

LIST OF PLANTS COLLECTED ON THE PEARY ARCTIC EXPEDITION OF 1905–06 AND 1908–09 WITH A GENERAL DESCRIPTION OF THE FLORA OF NORTHERN GREENLAND AND ELLESMERE LAND

By P. A. Rydberg

(*Continued from December Torreya*)

II. List of Plants Collected by Dr. L. J. Wolf and by Dr. J. W. Goodsell

Ferns*

Dryopteris dilatata (Hoffm.) A. Gray (*Aspidium spinulosum dilatatum* Hook.). A rather common species of north temperate regions of America, Europe, and Asia.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 78*, *86*, and *88*.

Filix fragilis (L.) Underwood (*Cystopteris fragilis* Bernh.). A species distributed over most parts of the world in colder or mountainous regions.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 43*.

Monocotyledons

Alopecurus alpinus Smith. A grass of arctic swamps and meadows of North America, Europe, and Asia, also found in the northern Rocky Mountains and the mountains of Scotland.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 23;* vicinity of Cape Sheridan, Grant Land, June 15–17, 1909, *Goodsell 56*.

Calamagrostis canadensis L. A common grass of open woods,

* Determined by Mr. R. C. Benedict.

[No. 12, Vol. 11, of Torreya, comprising pp. 249–278, was issued 12 Ja 1912. The date, 20 D 1911, given in December Torreya, as the day of issue, is an error.]

thickets, and meadows from Labrador to North Carolina, California, and Alaska.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 64* and *66*.

Deschampsia flexuosa (L.) Trin. In dry places from southern Greenland to North Carolina, Tennessee, and Michigan; also in Europe and Asia.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 65* and *62* (the latter bears leaves only, but probably belongs here).

Poa alpina L. An alpine-arctic grass, distributed over arctic and subarctic North America and extending south to Quebec and Lake Superior and in the Rocky Mountains to Colorado; also in Europe and Asia.

Grant Land, July, 1906, *Wolf*. Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 9*.

Poa glauca Vahl. (*P. caesia* Smith). An arctic grass of circumpolar distribution; found also in the White Mountains of New Hampshire and some of the mountains of northern Europe and Asia.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 63* and *87*.

Poa glauca elatior And. With the species but less common and apparently restricted to arctic North America.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 24*.

Poa abbreviata R. Br. A very rare, truly arctic species, distributed from the arctic coast of North America to Greenland and Spitzbergen.

Grant Land, July, 1906, *Wolf;* vicinity of Cape Sheridan, Grant Land, June 15–July 17, 1909, *Goodsell 57;* also a sterile tuft (not numbered) which probably belongs here.

Poa evagans Simmons. The specimens in the collection are doubtfully referred to this species, of which there are no specimens in the herbaria here in America. The only locality given by Simmons is on the southern coast of Ellesmere Land.

Grant Land, July, 1906, *Wolf*.

Festuca rubra L. Meadows from Greenland to North Carolina, California, and Alaska; also in Europe and Asia.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 40.*

Festuca supina Schkur (*F. ovina supina* Hackel). A fairly common dry-land species of arctic-alpine North America, Europe, and Asia, in this country extending south to Vermont, Colorado, and California.

Vicinity of Cape Sheridan, Grant Land, June 15 to July 17, 1909, *Goodsell 55.*

Festuca supina forma *vivipara.* The specimens in this collection have the glumes hirsutulous, at variance with the usual form of *F. supina.* They match perfectly specimens collected by Lundbom at Nunarsuak, Greenland.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 67* and *76.*

Eriophorum Scheuchzeri Hoppe. In swamps from Greenland to Newfoundland, Manitoba, Oregon, and Alaska; also in Europe.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 3;* ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 75.*

Carex canescens L.* Swamp from Newfoundland and Labrador to Virginia, Colorado, Oregon, and Alaska; also in Europe and Asia.

Ravine on Caribou Island, Battle Harbor, Labrador, *Goodsell 69.*

Carex brunnescens gracilior Britton.* Moist places from Labrador to New York, Colorado, and British America.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 68.*

Juncoides hyperboreum (R. Br.) Sheld. (*Luzula confusa* Lindebl.). A species of arctic America, Europe, and Asia; extending south in this country to the mountains of New England and the northern Rockies.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 22.*

Dicotyledons

Salix Waghornei Rydb. A rare willow, found in Newfoundland and Labrador.

* Determined by Mr. K. K. Mackenzie.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 73*. (Leaves only, but evidently belonging here.)

Salix glauca L. A species common in arctic and subarctic Europe. The specimens belong to the American form growing in Labrador and Newfoundland. It differs considerably from the European form, especially in pubecsence, and may be distinct.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 72*.

Salix arctica Pall. A dwarf arctic species of willow, common in Asia and western North America but rare in the northeastern part of the latter continent. Only a small sterile specimen was collected by Dr. Wolf, which seems to belong to this species.

Grant Land, July, 1906, *Wolf*.

Salix groenlandica (Anders.) Lundstr. A dwarf arctic willow confined to Greenland, Labrador, and the islands of Baffin Bay.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 5;* Grant Land, Latitude 82° 27′, July, 1906, *Wolf*.

Salix anglorum Cham. (*S. arctica* R. Br.; not Pall.; *S. arctica Brownei* Anders.). A dwarf arctic species, ranging from Greenland to Alaska.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 6* (depauperate); vicinity of Cape Saumarey, August, 1908, *Goodsell 26*.

Oxyria digyna (L.) Hill. The arctic sorrel is common in arctic and alpine regions of North America, Europe, and Asia, extending south in this country to New Hampshire, Colorado, and California.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 19;* vicinity of Cape Sheridan, Grant Land, July 15 to Aug. 17, 1909, *Goodsell;* Grant Land, July, 1906, *Wolf*.

Bistorta vivipara (L.) S. F. Gray (*Polygonum viviparum* L.).

In cold swamps from Greenland to New Hampshire, Colorado, and Alaska; also in Europe and Asia.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 20*.

Alsine Edwardsii (R. Br.) Rydb. (*Stellaria Edwardsii* R. Br.). An arctic species ranging from Greenland and Labrador to the Hudson Bay region, the Canadian Rockies, and Alaska.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 15;* vicinity

of Etah, Aug. 8–16, 1908, *Goodsell 37;* Grant Land, July, 1906, *Wolf.* In *Goodsell 15*, the calyx is more or less white-villous.

Cerastium alpinum L. An arctic-alpine species, the range of which extends from Greenland to Quebec, the Canadian Rockies, and Alaska; also in Europe and Asia.

Grant Land, July, 1906, *Wolf;* vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 8;* vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 13;* ravine on Caribou Island, Battle Harbor, Aug. 15, 1909, *Goodsell 79;* vicinity of Cape Sheridan, Grant Land, June 15 to July 17, 1909, *Goodsell 54.* (The latter is a depauperate form answering to var. 3 of Simmon's Vascular Plants of Ellesmereland.)

Cerastium alpinum lanatum Lindebl. An arctic variety, confined to Greenland and neighboring islands.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 14.*

Wahlbergella apetala (L.) Fries (*Lychnis apetala* L.). An arctic-alpine species, distributed through the colder parts of Europe, Asia, and North America, in the latter extending south to Labrador and in the Rockies to Utah and Colorado.

Grant Land, July, 1906, *Wolf.*

Wahlbergella triflora (R. Br.) Fries (*Lynchnis triflora* R. Br.). An arctic species, apparently confined to Greenland.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 10;* vicinity of Etah, Aug. 6–18, 1908, *Goodsell 41* (poor and doubtful specimen).

Ranunculus nivalis L. An arctic-alpine species, distributed over parts of Europe, Asia, and North America, in the latter extending from Greenland and Labrador to the northern Rockies and Alaska.

Vicinity of Cape Sheridan, Grant Land, June 15 to July 17, 1909, *Goodsell 51.*

Papaver radicatum Rottb. (*P. nudicaule* Lange, not L.; *P. alpinum* Am. auth.; not L.). The so-called "Iceland poppy" is one of the most showy arctic species and in many places is the characteristic plant of the arctic flora. It is common in the whole arctic region of North America and Europe, less so in Asia, where *P. nudicaule* L., a related species, is more common.

P. radicatum extends south to Labrador and in the Rockies to Colorado.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 1;* vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 12;* vicinity of Etah, Aug. 6–18, 1908, *Goodsell 36;* vicinity of Cape Sheridan, Grant Land, June 15–17, 1909, *Goodsell 50;* Grant Land, July, 1906, *Wolf.*

Draba alpina L. A circumpolar arctic species, in America extending south to Labrador and the Canadian Rockies.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 2;* vicinity of Cape Sheridan, Grant Land, June 15–17, 1909, *Goodsell 53* (depauperate).

Draba glacialis Adams. An arctic-alpine species distributed over most of the northern part of Asia and North America, in the latter extending south in the Rockies to Wyoming.

Vicinity of Cape Sheridan, June 15–July 17, 1909, *Goodsell 52.*

A specimen with rather densely pubescent pods is doubtfully referred here. The typical *D. glacialis* has the pod glabrous or nearly so.

Grant Land, July, 1906, *Wolf.*

Draba fladnizensis Wulfen. An arctic-alpine plant, distributed through the arctic and subarctic regions and the higher mountains of Europe, Asia, and North America, extending as far south as the Pyrenees, Himalayas and the Rockies of Colorado.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 18;* vicinity of Etah, Aug. 6–18, 1908, *Goodsell 46.*

Draba hirta L. A circumpolar arctic species, also found in the mountains of Europe and Asia, but in America confined to the arctic regions.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 25.*

Braya glabella Richardson. A rare species confined to arctic America.

Grant Land, July, 1906, *Wolf.*

Cochlearia groenlandica L. A strictly arctic species, probably of circumpolar distribution.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 27.*

Cochlearia fenestrata R. Br. An arctic species, closely related to the last and often confused with it. It is apparently confined to arctic America.

Grant Land, July, 1906, *Wolf.*

Rhodiola rosea L. (*Sedum Rhodiola* DC.). A species not uncommon in the arctic and mountainous parts of Europe; in America confined to the north, extending south to Newfoundland and Maine in the east. It has also been collected at two stations in Pennsylvania.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 74.*

Saxifraga cernua L. A circumpolar arctic-alpine species, in America extending south to Labrador and in the Rocky Mountains to Colorado.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 16;* vicinity of Cape Sheridan, Grant Land, June 15 to July 17, 1909, *Goodsell 60* (depauperate specimen); Grant Land, July, 1906, *Wolf.*

Saxifraga rivularis L. A circumboreal species, in America extending south to the White Mountains and to the Rocky Mountains in Montana.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 48.*

Muscaria caespitosa (L.) Haw. (*Saxifraga caespitosa* L.). A circumpolar arctic and subarctic species, extending in America from Greenland to Labrador, Montana, British Columbia, and Alaska.

Vicinity of Cape Sheridan, Grant Land, June 15 to July 17, 1909, *Goodsell 59.*

Leptacea tricuspidata (Rottb.) Haw. (*Saxifraga tricuspidata* Rottb.). An arctic-alpine species, ranging from Greenland to Labrador, Lake Superior, the Canadian Rockies, and Alaska.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 47* and *42;* vicinity of Cape Saumarey, Aug. 8, 1909, *Goodsell 28.*

Leptacea flagellaris (Willd.) Small (*Saxifraga flagellaris* Willd.). A circumboreal alpine-arctic species, extending in America south in the Rockies to Arizona.

Vicinity of Cape Sheridan, Grant Land, June 15 to July 17, 1909, *Goodsell 58;* Grant Land, July, 1906, *Wolf.*

Antiphylla oppositifolia (L.) Fourr. (*Saxifraga oppositifolia* L.). A circumpolar arctic-alpine species, in America extending south to Vermont, Montana and British Columbia.

Vicinity of Cape Sheridan, Grant Land, June 15 to July 17, 1909, *Goodsell 49;* vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 11;* Grant Land, July, 1906, *Wolf.*

Potentilla emarginata Pursh. An arctic species, ranging from Greenland and Labrador to the Canadian Rockies and Alaska; also in Siberia and on Spitzbergen.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 7;* vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 32.*

Potentilla Sommerfeltii Lehm. A rare arctic species, growing in Spitzbergen, Greenland, the Baffin Bay islands, and the arctic coast of America.

Grant Land, July, 1906, *Wolf.*

Potentilla pulchella R. Br. An arctic species of the same range as the preceding, but it has also been collected on Wrangel Island off Siberia.

Vicinity of Etah, Aug. 6–18, 1908; *Goodsell 39.*

Potentilla Vahliana Lehm. An arctic species, ranging from Greenland through the islands north of Hudson Bay, and the arctic coast of America to Alaska.

Vicinity of Cape Saumarey, Aug. 8, 1909, *Goodsell 31.*

Sibbaldiopsis tridentata (Soland.) Rydb. (*Potentilla tridentata* Soland.). A plant of rocky places, ranging from Greenland to the mountains of Georgia, west to Minnesota and Manitoba.

Ravine on Caribou Island, Battle Harbor, Aug. 15, 1909, *Goodsell 82.*

Comarum palustre L. A swamp plant distributed through northern and subalpine Europe, Asia, and America, ranging in the latter from Greenland to New England, Minnesota, Wyoming, California. and Alaska.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 77.*

Rubus Chamaemorus L. An arctic and subarctic bog plant, ranging from Labrador and Newfoundland to New Hampshire, British Columbia, and Alaska; also in Europe and Asia.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 91*. (The specimens are in leaf only.)

Dryas integrifolia Vahl. An arctic and subarctic species, distributed from Greenland to Anticosti and Alaska.

Vicinity of North Star Bay, Aug. 3–6, 1908, *Goodsell 4*. Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 21*.

Empetrum nigrum L. An arctic and subarctic undershrub of wet and rocky places from Greenland to Maine, northern New York, Michigan, Montana, and Alaska; also in Europe and Asia.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 70*.

Viola palustris L. In swamps from Labrador to New England, Colorado, Washington, and Alaska; also in Europe and Asia.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 83*.

Chamaenerion latifolium (L.) Sweet (*Epilobium latifolium* L.). An arctic-alpine plant of moist places, ranging from Greenland to Quebec, Colorado, Oregon, and Alaska; also in Europe and Asia.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 33*.

Epilobium palustre L. A circumpolar bog plant, extending in this country south to the White Mountains and Ontario.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 81*.

Cornella suecica (L.) Rydb. (*Cornus suecica* L.). A circumpolar arctic or subarctic plant of wet woods, ranging in this country from Labrador and Newfoundland to Quebec and Alaska.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 85*.

Conioselinum pumilum Rose sp. nov.

Stems simple or nearly so, low, 12 to 15 cm. high, glabrous, purplish, somewhat fluted; stem leaves 2 or 3, small, 3 to 6 cm. long, ternately divided, ultimate segment sharply toothed or cleft, glabrous; inflorescence a small compact terminal umbel, sometimes with an additional lateral one; involucre none; involucel bractlets several, filiform, longer than the pedicels; rays 12 to 18 mm. long, only slightly if at all scabrous; pedicels 3 to

4 mm. long, glabrous; fruit smooth; carpels 3 to 3.5 mm. long, a little longer than broad; stylopodium depressed.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 81*.

Pyrola grandiflora Radius (*P. rotundifolia grandiflora* DC.). An arctic and subarctic bog plant, ranging from Greenland to Labrador and the Mackenzie River.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 45*.

Cassiope tetragona (L.) D. Don. An arctic species, distributed from Greenland and Labrador to Washington and Alaska; also in Asia.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 30*.

Ledum groenlandicum Oeder (*L. latifolium* Ait.). A bog plant, ranging from Greenland to Massachusetts, New Jersey, Wisconsin, British Columbia, and Alaska.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 71*.

Vaccinium Vitis-idaea L. A circumpolar undershrub, common in Europe but rare in America, there ranging from Greenland to Massachusetts, Lake Superior, British Columbia, and Alaska.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 90*.

Campanula uniflora L. An arctic-alpine species, ranging from Greenland and Labrador to Alaska and in the Rockies south to Colorado; also in northern Europe and Asia.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 17*.

Solidago macrophylla Pursh (*Solidago thyrsoidea* E. Meyer). A plant of rocky woods from Labrador to the Catskill Mountains, Lake Superior, and Hudson Bay.

Ravine on Caribou Island, Battle Harbor, Labrador, Aug. 15, 1909, *Goodsell 80*.

Erigeron trifidus Hook. An arctic-alpine species, distributed from Greenland to Colorado, California, and Alaska.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 38*.

Arnica alpina (L.) Olin. An arctic and subarctic species, ranging from Greenland to Labrador, the Canadian Rockies, and Alaska.

Vicinity of Etah, Aug. 6–18, 1908, *Goodsell 34* and *44*.

Taraxacum phymatocarpum Vahl. An arctic species, confined to Greenland and Ellesmere Land.

Vicinity of Cape Saumarey, Aug. 8, 1908, *Goodsell 29;* vicinity of Etah, Aug. 6–18, 1908, *Goodsell 35*.

Taraxacum pumilum Dahlst. An arctic species, confined to the arctic American archipelago.

Grant Land, July, 1906, *L. J. Wolf*.

Taraxacum hyparcticum Dahlst. An arctic species, ranging from northwestern Greenland through the arctic archipelago, along the arctic coast to Point Barrow, Alaska.

Grant Land, July, 1906, *L. J. Wolf*.

NEW YORK BOTANICAL GARDEN

TWO SPECIES OF HABENARIA FROM CUBA

BY OAKES AMES

Habenaria Brittonae *sp. nov.* In general habit similar to *H. alata* Hook. 6 dm. tall, slender. *Leaves* linear-oblong to linear-lanceolate passing gradually into the foliose acute bracts of the stem. *Raceme* 12 cm. long, slender, rather densely flowered, the bracts nearly equalling or exceeding the flowers. *Lateral sepals* 6.5 mm. long, lanceolate, acute, with the midnerve produced under the point into a setiform tip, margin obscurely denticulate. *Upper sepal* broadly ovate, 5 mm. long, otherwise similar to the lateral. *Petals* subsimple or obscurely bipartite. Posterior division linear-oblong, rounded at the tip, obtuse, 5 mm. long, about 1 mm. wide, recurved-falcate, anterior division in the form of an obtuse, basal protuberance or tooth. *Labellum* tripartite, lateral divisions shorter than the middle one, setaceous, about 3 mm. long, middle division linear, 6 mm. long, obtuse, convex, the margins strongly deflexed. *Stigmatic processes* longer than the anther canals, flattened suborbicular. *Spur* longer than the labellum, about equalling the ovary or shorter, clavate, subacute, about 1 cm. long.

Folia lineari oblonga, alterna, (?) 4–5. *Bracteae* caulis vaginantes super folia lineari-lanceolatae, acutae, infra folia obtusae. *Bracteae inflorescentiae* lanceolatae, acutae, ovaria longitudine excedentes. *Sepala lateralia* lanceolata, ad apicem cuspide munita. *Sepalum superius* ovatum, obtusum. *Petala* sub-

simplicia, falcata, linearia, obtusa, basi antice unidentata vel petalorum partitio antica in dentum minutum reducta. *Labellum* tripartitum, laciniae laterales lineares vel filiformes 3 mm. longae, lacinia media 6 mm. longa. *Calcar* ovario brevius 1 cm. longum.

CUBA: PROVINCE OF PINAR DEL RIO, vicinity of Venales, on hillside, *N. L. & E. G. Britton*, no. 7540, September 17, 1910; Wright 3307 in Hb. Gray.

I have been unable to refer this plant satisfactorily to any described species of *Habenaria*. It is similar in habit to *H. repens* Nutt., but from that it differs markedly in the form of the petals and labellum. The cuspidate or mucronate sepals are similar to *H. repens*. It may be the form of *H. tricuspis* Rich. to which Grisebach referred in his *Catalogus Plantarum Cubensium* characterized by reduced anterior divisions of the petals, an assumption which leads to the belief that *H. tricuspis* may not be referable to the synonymy of *H. repens* after all, and that it is a variable plant, characterized by variations in the relative lengths of the lip divisions and by petals with variously reduced anterior segments. However this may be, I find in my herbarium a specimen of *H. repens* from Georgia accompanied by the following note: "Compared with Wright 3305 (sub nom. *tricuspis*) and Wright 3309 (sub nom. *tricuspis* Rich. near *H. radicans* Griseb.) at British Museum and found to be like them." The specimen in question is quite distinct from *H. Brittonae*. In the study of the type material of *H. tricuspis* Rich. the conclusions arrived at, as indicated in *Orchidaceae IV*, were that it was conspecific with *H. repens*, a conclusion which is borne out by Kränzlin in *Orchidacearum Genera et Species*, and by Cogniaux in Urban's *Symbolae Antillanae*, although neither author states that he has seen Richard's type.

Wright's 3305 and 3309 preserved in the Gray Herbarium of Harvard University, both labelled *H. tricuspis* var., are referable to *H. repens*, as they have the characteristic perianth divisions of that species. Wright's 3307, on the other hand, preserved in the same collection, is characterized by lips and petals similar to those of the plants from Venales. *H. tricuspis* as described by

Richard does not include *H. Brittonae*, which appears to be an undescribed species.

Habenaria nivea (Nutt.) Spreng.

This species, which heretofore has been known only as a native of the United States, with a range extending from Florida and Louisiana on the south to Delaware on the north, is now known to be a native of Cuba. I have examined five plants collected in Pinar del Rio Province, submitted for identification by the Director of the New York Botanical Garden. I have compared the flowers very carefully with those of *H. nivea* from Florida and other parts of the United States without being able to find distinguishing characters which indicate specific differences. There are differences, but they are slight and too trivial in my estimation to warrant the recognition of a new species.

CUBA: PINAR DEL RIO PROVINCE, Laguna Santa Maria, *N. L. & E. G. Britton, & C. S. Gager*, no. 7126, September 8, 1910. Wet sandy pine-lands, Sierra del Cabra, on Guane Road, *N. L. & E. G. Britton, & C. S. Gager*, no. 7272, September 9, 1910, on hillside.

AMES BOTANICAL LABORATORY,
NORTH EASTON, MASS.

UNDESCRIBED SPECIES OF CUBAN CACTI

BY N. L. BRITTON AND J. N. ROSE

Pereskia cubensis sp. nov.

A tree up to 4 meters high, with a trunk up to 2.5 dm. in diameter, and a large, much-branched-top; bark brownish, rather smooth, marked by black horizontal bands (representing the old areoles) broader than high. Young branches slender, smooth, with light brown bark; spines of young areoles 2 or 3, needle-like, 2–3 cm. long, of old areoles very numerous (25 or more) and much longer (5 cm. or more long); leaves bright green on both sides, somewhat fleshy, the midvein broad, distinct, the lateral veins very obscure, oblanceolate to oblong-elliptic, several at each areole, 1.5–4 cm. long, 10–12 mm. wide, acute at both ends; flowers small, white (?), solitary; peduncle very short (2–3 mm. long), fleshy, jointed near the base, bearing 1 to 3 leaf-like bracts; fruit not seen.

Dry thickets at 5–10 meters elevation, province of Oriente.

Specimens examined: *C. Wright 205* (*type*); Los Caños, March, 1909 (*N. L. Britton 2013*); near Caimanera (*Eggers 5441*).

ILLUSTRATION: Jour. N. Y. Bot. Gard. **10**: 109. *f. 22.* 1909.

Wright's plant was distributed as *P. portulacifolia* and so recorded by Grisebach, but that species of Hispaniola has quite different leaves, as is shown by the old illustration of *Cactus portulacifolius* L. is based (Plumier, ed. Burmann, *pl. 197. f. 1*) and by specimens collected by Buch in Haiti, examined by Professor Urban.

A similar, perhaps identical, species grows on La Vigia Hill, Trinidad, Province of Santa Clara (*Britton & Wilson 5513*).

Opuntia cubensis sp. nov.

Plants about 6 dm. high, rather widely branched. Joints oblong, dull green, 8–18 cm. long, 7 cm. wide or less, 1–2 cm. thick, not readily detached, their margins slightly crenate; areoles 1–2 cm. apart; spines 2–5 at each areole, acicular, pale yellow when young, becoming grayish-white, the longer 5 cm. long or less; glochides numerous, brown, 3–4 mm. long; ovary clavate, 4 cm. long, bearing several tufts of glochides; corolla pale yellow, 8 cm. broad.

In sand, valley near coast, U. S. Naval Station, Guantanamo Bay, March, 1909, *N. L. Britton 2064*.

A species of the Series Tunae, related to *O. Dillenii* and *O. lucayana*, both of which have brighter yellow spines and strongly crenate joints.

3. **Cephalocereus Brooksianus** sp. nov.

Plant 3–6 meters high, stout, much branched at base, dark bluish-green, densely pruinose. Ribs 8 to 9 deep, obtuse; areoles closely set, in flowering specimens almost contiguous, and bearing long hairs, very dense in flowering specimens; spines about 16, yellow, all somewhat similar, the upper one of each areole ascending; flowers about 5 cm. long, purplish; ovary naked.

Near Novaliches, about six miles south of Guantanamo, May 8, 1907 (*Wm. R. Maxon 4512*).

Named in honor of Mr. Theodore Brooks, of Guantanamo, who has greatly facilitated the botanical exploration of eastern Cuba.

Leptocereus Leoni sp. nov.

Plant up to 5 m. high, repeatedly branching, the round trunk 3 dm. in diameter at the base, the cortex scaly-roughened, the old areoles 1–1.5 cm. apart in vertical rows and bearing acicular spines. Ultimate branches about 1.5 cm. thick, slender, elongated, 6–8-ribbed, the ribs crenate, the areoles borne at the depressions, 1–1.5 cm. apart; spines 6–12 at each areole, yellowish when young, gray when old, slenderly acicular, 2–9 cm. long; wool brown, very short; perianth pink, withering-persistent, narrowly campanulate, 3.5 cm. long; the limb about one fourth as long as the tube, which bears numerous scattered areoles, each with 1–4 short spines or some of them spineless; segments of the limb about 15, oblong-orbicular, obtuse; stamens very numerous; stigma not exserted; fruit globose-oval, 2 cm. in diameter, with a few scattered spine-bearing areoles; seeds black.

Limestone cliffs, Sierra de Anafe, near Guayabal, extreme eastern part of the province of Pinar del Rio (*Brother Leon*, Nov. 9, 1911, *2819, type; 2802; Britton, Cowell & Leon 9594*).

Leptocereus arboreus sp nov.

Plant up to 5 meters high, erect, much branched. Joints 3–10 dm. long, 4–6 cm. wide, narrowed at base; ribs 4, narrow, thin, 1.5–2 cm. deep, somewhat depressed between the areoles; areoles 2.5–4 cm. or less apart; spines 10 or fewer, acicular, yellowish, becoming gray, radiating, the longer up to 5 cm. long; corolla short-campanulate, about 2 cm. long, almost enclosed in the bur-like ovary; petals cream-colored; fruit ellipsoid, 8–10 cm. long, 5–6 cm. thick, its areoles bearing tufts of numerous light yellow spines.

Rocky hillside, Punta Sabanilla, mouth of Cienfuegos Bay, Province of Santa Clara, February 24, 1910 (*Bri ton, Earle & Wilson 4573, type*); Castillo de Jagua, Cienfuegos Bay (*Britton, Cowell & Earle 10298*).

Coryphantha cubensis sp. nov.

Plants depressed-globose, tufted, 2–3 cm. broad, pale green. Tubercles numerous, vertically compressed, 6–7 mm. long, 4–5 mm. wide, about 3 mm. thick, grooved on the upper side from the apex to below the middle, the groove very distinct; spines about 10, whitish, radiating, acicular but weak, 3–6 mm. long, those of young mamillae subtended by a tuft of silvery white

hairs 1.5 mm. long; flowers pale green, 16 mm. high, the segments acute.

Among small stones in barren savanna southeast of Holguin, Oriente (*J. A. Shafer 2946*).

Cactus Harlowii sp. nov.

Plants light green, 2.5 dm. high or less, simple or sometimes in clusters of 3 to 6 on the tops of old individuals. Ribs 12, rather narrow; areoles becoming glabrate, closely set (less than 1 cm. apart); radial spines about 12, slender, slightly spreading, 10 to 20 mm. long, reddish, becoming straw-colored in age; central spines 4, similar to the radials, stouter and longer, sometimes 3 cm. long, often somewhat curved; cephalium prominent, composed of white wool and fine reddish brown bristles projecting beyond the wool; flowers small, 2 cm. long, deep rose red; fruit deep red, obovoid, short, 2 cm. long; seeds black, shining.

Coastal cliffs, U. S. Naval Station, southern Oriente, March, 1909. *N. L. Britton 1965*.

Named in honor of Captain Charles Henry Harlow, U.S.N., commandant at the Naval Station at the time this interesting species was collected.

CURRENT LITERATURE

A NEW PAINT-DESTROYING FUNGUS is the title of an interesting paper by Mr. George Massee, in the *Bulletin of Miscellaneous Information of the Royal Botanic Gardens at Kew, England*, No. 8, p. 325. In this place Mr. Massee describes a new species (*Phoma pigmentivora* Mass.) which is very destructive to white paint when present in greenhouses having a high humidity and temperature. We know that certain fungi grow upon media as diverse and apparently unsuitable as dilute mineral acids, writing ink, tannic acid solutions, etc., but they do not often fruit under such conditions. However, this fungus not only grows upon the paint, but seems to flourish and even produces its fruit in abundance. At first thought it seems somewhat startling that a plant should thrive upon a medium like paint containing large amounts of lead, which is usually one of the most toxic of agents acting upon organisms. This is another example of the great

flexibility and adaptability of living protoplasm to conditions apparently unfavorable in the highest degree.

About one month after the paint has been applied it begins to be dotted with small pink specks that increase in size, and finally turn purple. These blood-stain like blotches grow until they are several inches in diameter, and, of course, by this time have completely ruined the appearance of the painted structures. The spores are now produced in dark red, warty, fruiting bodies and are then liable to infect any other paint in the vicinity. Several greenhouse painters in England complain of serious losses through this agency.

When the spores of the fungus are sown on wet white paint they germinate readily and in a few weeks produce all the characteristic effects observed in the infected greenhouses. Upon pure linseed oil the spores germinate and grow for a time, but no fruit or pigment is produced. Furthermore, upon pure white lead there was no germination at all; so, both the oil and white lead seem to be necessary for the full development of the plant. The bright red pigment is produced in oily red drops inside a colorless cell wall. The nature of this pigment is unknown, but the author's suggestion that it may be due to the formation of the red oxide of lead hardly seems tenable, judging from his description of it or from the fact that it is bleached by hydrogen peroxide. Finally it was found that paint made up to contain two per cent. of carbolic acid was wholly free from infection with the organism. Here we see lead playing the part of a favorable medium for the growth of this fungus and carbolic acid acting as a fungicide.—E. D. C.

In discussing the origin of species in nature Dr. Henry Huss (*American Naturalist* for November) says: "Whoever can devote a part of his time to the study of a genus is able to establish the existence of differences, which, formerly ignored and in themselves slight, are of the greatest importance for the tracing of relationships."

Differences between the leaves of old and young shoots, variations shown by leaves of fruiting branches and adventitious

shoots, the common heterophylly in the horseradish, sassafras, and the mulberries all show that plants must be studied throughout their various stages of development and through the seasons.

Variation in garden plants (in leaf, in flower color, shape, and arrangement) are common and are probably more important than they are usually considered. From similar variations reported from widely distributed points or at widely separated intervals the conclusion is drawn that a new form, which has appeared at various times and which because of the nature of the variation is incapacitated from reproducing itself by seed, would from this very fact constitute an ideal illustration of repeated mutation, since a hybrid origin of the individuals which appeared later, is excluded.—J. B.

There has long been the impression that desert plants must have very deeply penetrating root systems, quite oblivious of the fact that in most desert regions the soil water lies so far below the surface that many if not the majority of plants would be quite unable to develop roots capable of reaching it. Dr. Cannon* in a recent paper has shown that there is a great diversity in the root distribution of such forms. Those which grow in the flood plains of the rivers, as for instance the mesquite, may indeed have fairly deep roots, for the water table in such localities is within reach even in a desert. Those, on the other hand, which grow on the detrital slopes are much more likely to have shallow root systems which extend over a large area. In even the larger cacti, for instance, the tap-root is a negligible quantity except perhaps for anchorage and the superficial laterals spread out for a long distance. The water which the plants avail themselves of is the surface moisture which comes from the seasonal though brief and scanty rains of the region. In Tucson, Arizona, where there are two short rainy seasons, one in winter, the other in summer, the annuals show a difference in the development of their absorbing systems which is apparently due to the relative difference of air and soil temperatures at those

* W. A. Cannon. Root Habits of Desert Plants. Carnegie Institution of Washington. Publication 131, pages 1–96, Pl. 1–23; fig. in text 1–17, Mar. 28, 1911.

periods, rather than being due alone to the difference in the mean air temperature. It is impossible in so short a notice to bring to the attention of the reader all the many points of interest in this publication which merits a careful perusal.—H. M. R.

Professor Peirce in the October *Popular Science Monthly* discusses the relation of civilization and vegetation. Civilization, he says, in "the form of agriculture plays sad havoc with natural native vegetation, destroying, driving back, exterminating most, domesticating and assimilating few, plants." Incidentally, in referring to the disappearance of the wild races from which our domesticated forms have arisen as due to assimilation he asks, "What is the joy of living as a tame hen, as a domesticated cow, as a pruned pear tree? 'The ox that treadest out corn' is sure of daily food; so is 'the cock of the walk'; so also are the subjugated plants of farm and garden; but individuality has been sacrificed for safety."

The article also discusses the injury to plants from air and soil gases, smoke, and cement rust.—J. B.

THE MONARDAS: A PHYTOCHEMICAL STUDY by Miss Wakeman appeared as Part 4 of Volume 4 of the Science Series of the *Bulletin* of the University of Wisconsin. Now and then one has the pleasure of reading a publication of this type in which the problem of the relations of a group of morphologically similar plants are attacked with chemical tools and it is found that the chemical relationships are also close. The genus *Monarda* contains several representatives and all are found in North America. Many of the species have bright colors and agreeable aromatic odors, so were early used by the first settlers and probably also by the Indians as "medicine" in the treatment of disease. The species are widely distributed and they go under a number of different local names.

The red pigment of the brilliant *M. coccinea* (*didyma*) was studied as early as 1832. Later, other chemists examined the

volatile oils of different *Monardas* and found crystalline deposits in the oils after standing. Careful work upon authentic material was not done until begun under the direction of Professor Kremers at Madison. Numerous investigations have been made there, especially upon the essential oils of this group. The oils of *Monarda citriodora*, *M. didyma*, *M. fistulosa* and *M. punctata* were studied in detail. With the exception of *M. didyma* the oils all contained considerable amounts of aromatic phenols. Hydrocarbons like limonene were also present in several species. As a rule, all of the oils were light in color when freshly distilled but gradually turned darker in the course of time, probably owing to oxidation. This led the investigators to look for easily oxidizable substances and their search was successful, for they found that thymoquinone and certain of its derivatives were present in the oils. Now, the quinones, as a class, are often colored or yield brightly colored red, orange, or yellow substances after chemical treatment. We have here a group of closely related plants that contain substances of similar structure from the chemical point of view. A study of the part these substances play in the pigmentation of the plant was then undertaken.

The pigments of the different *Monardas* give to their flowers the red, yellow, brown and purple colors that make them attractive. These pigments are extracted with various solvents. The colors of each are different, but upon chemical study they all appear to be derived from one or two closely related mother-substances, among which thymoquinone has been obtained in the form of beautiful yellow crystals. Substances of this type give brilliantly colored final or intermediate oxidation products. It was found that the *Monardas* contain oxidases or oxidizing ferments (destroyed by heat) that can oxidize these color-producers from one stage to another with accompanying change of hue. Many investigators consider that numerous other cases of pigment formation in plants are due to the action of these oxidases upon various colorless constituents of the plant. The question of pigment production is one of growing interest among both botanists and chemists. The present publication is a valuable contribution to our understanding of this problem.

Miss Wheldale, in England, has recently published two papers that are very interesting in the same connection. One is "The Chemical Differentiation of Species," *Biochemical Journal* **5**: 445 (1911); and the other is "The Colours and Pigments of Flowers with Special Reference to Genetics," *Proceedings of the Royal Society*, Series B, **81**: 44 (1909).—E. D. C.

Under the authorship of M. F. Barrett of the State Normal School at Upper Montclair, New Jersey, there has appeared a "LEAF KEY TO THE GENERA OF THE COMMON WILD AND CULTIVATED DECIDUOUS TREES OF NEW JERSEY." The author apparently realized the impossibility of determining the different genera of trees by leaf characters alone, and frequent use is made of other but equally obvious characters. Used under the guidance of a teacher knowing the trees, the key should prove a useful pamphlet to the beginner. Some of the distinctions drawn between genera, the hickories and walnuts for example, require more botanical judgment than the unaided beginner is apt to have, but the key will be a great help in class work, where the instructor exercises considerable interpretative helpfulness. Copies may be procured from the above address and cost only ten cents each. —N. T.

The September *Mycologia* includes an article by Bruce Fink on the nature and classification of lichens; it consists chiefly of collected statements of various botanists with reference to considering lichens as a distinct class. About 83 per cent. of the 115 botanists consulted believe that the lichens should be maintained as a distinct group of plants; the balance would distribute them among other fungi to the exclusion of the group Lichenes. Forty botanists favored maintaining LICHENES, considering it a natural group. Europeans are more favorable to this division than Americans. Convenience for study is evidently considered an additional argument for maintaining the group.—J. B.

We are pleased to mention Publication No. 1 of the Botanical Society of Western Pennsylvania, issued Nov. 27, 1911. It has

been projected for the publication of articles, not too deep and extended, upon the flora of the western part of the state. Besides the proceedings of the Club and reports of the administrative character, it contains papers on the Pteridophytes of Allegheny County, The Fungal Flora of Pittsburgh, and Rambles in Panama and Jamaica. It has all of the characteristics of a well-edited and interesting journal covering a local area.—N. T.

A review (*Plant World*, July, 1911) of Fitting's recent paper dealing with the relation of osmotic pressure of the cell sap in plants to arid habitats gives some interesting figures concerning the pressure found in leaf cells. The reviewer, E. B. Livingston, says that "we find that the highest pressure developed by those desert forms is more than *thirteen* times what we have hitherto considered as *usual*. They are perhaps three times as great as the pressure observed in grass stems by Pfeffer. Hereafter the highest pressures observed by ordinary green plants must be cited as at least over 100, perhaps as high as 130 atmospheres, or even higher."—J. B.

PROCEEDINGS OF THE CLUB

October 25, 1911

The meeting of October 25, 1911, was held in the Museum Building of the New York Botanical Garden at 3:30 P.M., Vice-President Barnhart presiding. Fifteen persons were present.

The scientific program consisted of informal reports on the summer's work. Dr. N. L. Britton discussed the genus *Cameraria* L. and illustrated his remarks by specimens and illustrations of the known species, together with those of an undescribed one found by him at the United States Naval Station, Guantanamo, Cuba. He also remarked on the large number of undescribed species of plants in many genera contained in the recent Cuban collections of the New York Botanical Garden.

Dr. Marshall A. Howe gave a brief résumé of a paper on "Some

Marine Algae of Lower California, Mexico," which had been accepted for publication in the November number of the *Bulletin*. The algae of Lower California have been hitherto almost unknown, only seven species having been attributed to the region. The materials on which the present paper was based give evidence of the existence there of at least thirty-four species, a good proportion of them being new to science, and it seems probable that adequate exploration of the region would show its algal flora to be rich and varied.

Dr. J. K. Small gave some brief notes on certain species of *Peperomia*, and Dr. H. M. Richards outlined some research work on acidity in cacti, which he had been prosecuting at the Desert Laboratory, Tucson, Arizona.

Meeting adjourned.

FRED J. SEAVER,
Secretary pro tem.

NOVEMBER 14, 1911

The meeting of November 14, 1911, was held at the American Museum of Natural History at 8:15 P.M., Vice-President Barnhart presiding. Forty-five persons were present.

The minutes of the meetings of October 10 and October 25 were read and approved.

Mrs. N. C. Nuris, 611 W. 177th St., New York City, and Dr. George F. Bovard, University of Southern California, Los Angeles, California, were proposed for membership. There being no further business to consider Mrs. N. C. Nuris was then elected to membership in the Club.

The announced scientific program of the evening consisted of a lecture on "Trees of New York City," by Professor C. C. Curtis. The lecture was illustrated by numerous lantern slides.

Meeting adjourned.

B. O. DODGE,
Secretary

NEWS ITEMS

Professor J. E. Kirkwood has issued a prospectus of the short course in Forestry (January to March) at the University

Stewardson Brown, of the Academy of Natural Sciences, Philadelphia.

Professor A. F. Blakslee has a year's leave of absence from the Connecticut Agricultural College. He has a temporary appointment on the staff of the Carnegie Station for Experimental Evolution at Cold Spring Harbor, L. I., N. Y., where he will spend the year in research work on the lower fungi.

Dr. Ira D. Cardiff, professor of botany in Washburn College, has been appointed professor of plant physiology and plant physiologist of the Experiment Station of the Washington State College at Pullman.

The Torrey Botanical Club

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OTHER PUBLICATIONS

OF THE

TORREY BOTANICAL CLUB

(1) BULLETIN

A monthly journal devoted to general botany, established 1870. Vol. 38 published in 1911, contained 570 pages of text and 35 full-page plates. Price $3.00 per annum. For Europe, 14 shillings. Dulau & Co., 37 Soho Square, London, are, agents for England.

Of former volumes, only 24–37 can be supplied entire; certain numbers of other volumes are available, but the entire stock of some numbers has been reserved for the completion of sets. Vols. 24–27 are furnished at the published price of two dollars each; Vols. 28–37 three dollars each.

Single copies (30 cents) will be furnished only when not breaking complete volumes.

(2) MEMOIRS

The MEMOIRS, established 1889, are published at irregular intervals. Volumes 1–13 are now completed; Nos. 1 and 2 of Vol. 14 have been issued. The subscription price is fixed at $3.00 per volume in advance. The numbers can also be purchased singly. A list of titles of the individual papers and of prices will be furnished on application.

(3) **The Preliminary Catalogue of Anthophyta and Pteridophyta** reported as growing within one hundred miles of New York, 1888. Price, $1.00.

Correspondence relating to the above publications should be addressed to

DR. BERNARD O. DODGE
Columbia University
New York City

Vol. 12 December, 1912 No. 12

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A Monthly Journal of Botanical Notes and News

EDITED FOR

THE TORREY BOTANICAL CLUB

BY

NORMAN TAYLOR

JOHN TORREY, 1796–1873

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TORREYA

December, 1912.

Vol. 12 No. 12

THE HEMPSTEAD PLAINS OF LONG ISLAND*

By Roland M. Harper

There is in the western third of Long Island, within an hour's journey by rail from New York, about fifty square miles of dry land which was treeless when the country was first settled, and a considerable part of this can still be seen in its natural condition. This prairie, known locally as the "Hempstead Plains," is mentioned in a few historical and descriptive works, but long before geography became a science it had ceased to excite the wonder of the inhabitants, few of whom at the present time realize that there is not another place exactly like it in the world.

My attention was first called to it by the following statement in the U. S. Department of Agriculture's Soil Survey of the "Long Island area," by J. A. Bonsteel and others:†—"The . . . Hempstead plain is notable in being a natural prairie east of the Allegheny Mountains. In its natural state it bears a rank growth of sedge grass. It was treeless when first discovered and was originally used as commons for the pasturage of cattle and horses belonging to individuals and to communities." The

* This paper was originally read before the Association of American Geographers, December 31, 1909, and published in abridged form in the Brooklyn Standard-Union for January 16, 1910, and in full, with five illustrations, in the Bulletin of the American Geographical Society (43: 351–360) for May, 1911. On account of its local botanical interest, and in view of the fact that the periodicals named reach very few of the readers of Torreya, and that the area is rapidly being developed by real estate companies, we have obtained permission from the American Geographical Society to use it in Torreya. The author has here eliminated some passages which do not immediately concern botanists, and supplied an entirely new set of illustrations, none of which have ever been published before.—Ed.

† Field Operations of the Bureau of Soils for 1903, p. 99; or p. 13 of the "advance sheets" for this particular area, published in January, 1905. A somewhat similar statement occurs 27 pages farther on.

[No. 11, Vol. 12, of Torreya, comprising pp. 257–276, was issued 10 Nov. 1912.]

same thing has been mentioned incidentally in the catalogues of Isaac Hicks & Son, nurserymen of Westbury, L. I., and in "Long Island Illustrated," an attractive booklet issued annually by the Long Island Railroad.

For a generation or more the Hempstead Plains have been known to a few botanists as a good collecting ground, and every one who has traveled by rail from New York to Cold Spring Harbor, since the establishment of the Brooklyn Institute's biological laboratories at the latter place, has passed through several miles of what was once prairie, and seen a little which is

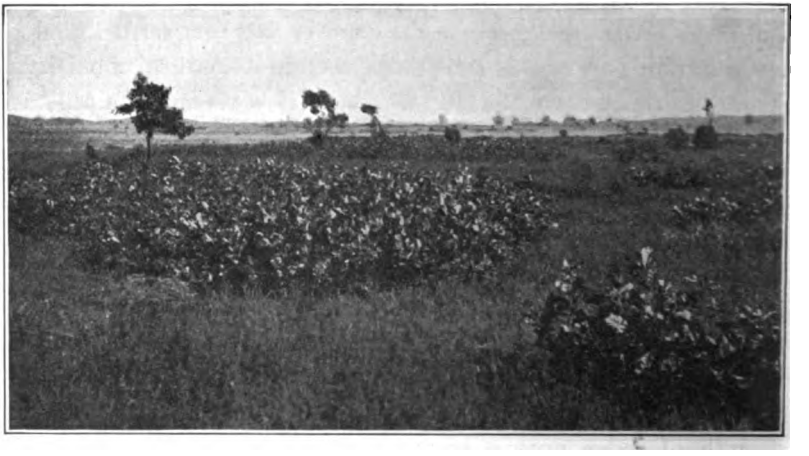

FIG. 1. Prairie scene about 3 miles south of Hicksville, *Quercus prinoides* in foreground, *Quercus minor* at left, *Betula populifolia* near center. August 25, 1909.

still in its natural condition; but to this day the real nature of the area in question has apparently never been mentioned in botanical literature. Previous to the summer of 1907 I had been along the edges of the area, as defined by Bonsteel, in several places, and penetrated into it for short distances, without seeing any natural vegetation, so I supposed that the prairie was all occupied by villages, private estates, farms, etc., and that it was consequently no longer possible to verify the published statements about its original vegetation. But one day in July of that year I happened to cross the center of the area on foot, and was surprised to find that there are still thousands of acres

on which *the flora is practically all native.* This is pretty good evidence that such areas have not only never been artificially deforested, but also never been touched by the plow. Where the sod is once broken a very different flora, consisting largely of European weeds, comes in, so that areas which have ever been cultivated can be distinguished at a glance. The same is true to some extent of areas that have been too closely grazed.

The prairie occupies the central portion of Nassau County, about midway between the north and south shores of the island. Like the pine-barrens of Suffolk County, a few miles farther

FIG. 2. Looking westward across the dry valley of Hempstead Brook toward Garden City, *Myrica carolinensis* at edge of valley in right foreground. Sept. 29, 1909.

east,* it lies entirely south of the latest terminal moraine (the Harbor Hill moraine), but partly overlaps or dovetails into the older of the two Long Island moraines (the Ronkonkoma moraine). Originally it extended westward to where Floral Park now is, and eastward to Central Park, a distance of about twelve miles, and had its greatest breadth from north to south, about seven miles, very near its eastern end. North of the straight main line of railroad from Floral Park to Hicksville, and also

* See TORREYA 8: 2. 1908.

west of Garden City and Hempstead, the original prairie vegetation has been almost totally obliterated; but a little south of Hicksville there are still a few places where one could describe a circle a mile in diameter without including a tree or a house or a field. Probably about one fifth of the original prairie area is still in its natural condition, except for being intersected by roads.

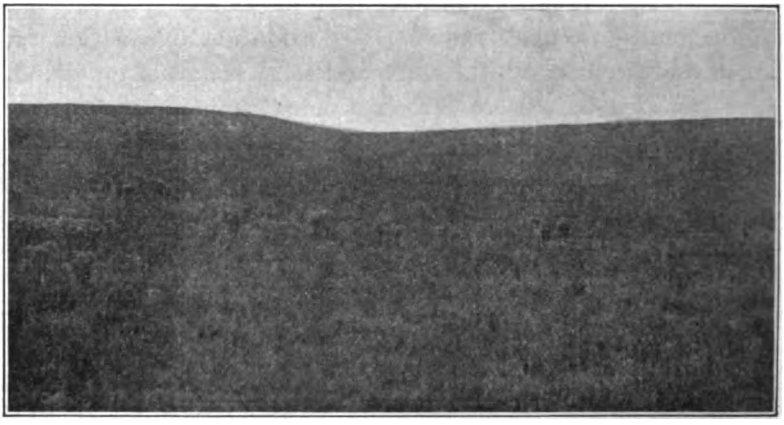

FIG. 3. Looking westward in dry valley about a mile south of Westbury Station. *Eupatorium hyssopifolium* in foreground. Aug. 14, 1909.

The surface of the Hempstead Plains, like the rest of the southern or unglaciated portion of Long Island, is for the most part very flat, and slopes gently southward at the rate of about one foot in 300. It ranges in altitude from about 60 to 200 feet above sea-level. Traversing the plain in a general north and south direction are a number of nearly straight broad shallow valleys, ten to twenty feet in depth, which are believed by geologists to have been formed by glacial streams and not by recent erosion. Within the limits of the prairie most of these valleys are now dry at all seasons, but farther south some of them contain permanent streams.

The upland vegetation of the Plains comprises about four species of trees, a dozen shrubs, sixty herbs, and a few mosses, lichens and fungi. The commonest tree is *Betula populifolia*, which in this region is oftener a shrub than a tree, and the other trees are *Quercus marylandica*, *Q. stellata*, and *Pinus rigida*,

which are scattered sparsely over the eastern part of the area. The shrubs also are most abundant eastward. One of them is a willow, *Salix tristis*, and two are oaks, *Quercus ilicifolia* and *Q. prinoides;* and nearly all grow less than knee-high. The commonest herb is *Andropogon scoparius*, a grass which is said to be also common on some of the western prairies. The herbaceous vegetation, which is almost the only vegetation between Hicksville and Hempstead, with the exception of one ubiquitous shrub, *Pieris Mariana*, covers the ground pretty closely except in the most gravelly areas, is nearly all perennial, and averages about a foot in height.

Although the prairie vegetation grows in comparatively dry and sour soil, and gets about all the sunshine and wind there is in those parts, it exhibits no extreme xerophytic adaptions. A good many species, including several of the most abundant

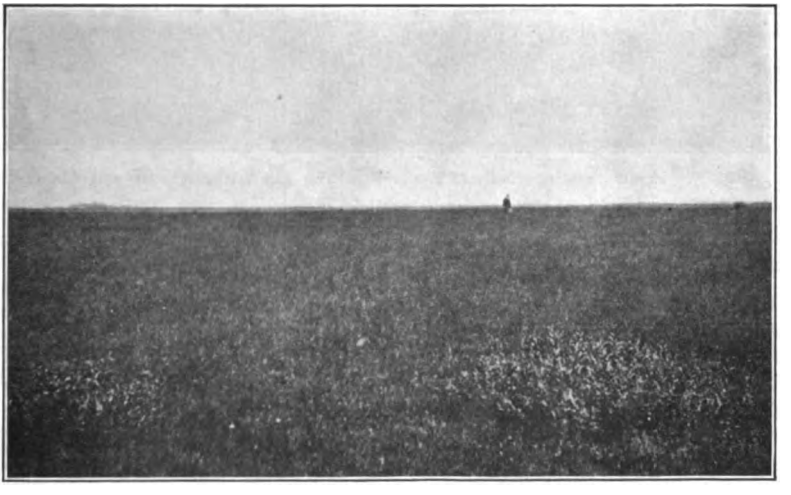

FIG. 4. About a mile east of Garden City, looking eastward. *Salix tristis* in foreground. Sept. 29, 1909.

ones, have decidedly canescent foliage, and about half as many are glaucous, so that the whole landscape has rather a grayish tint. A large proportion of the species have very narrow leaves, but there are no succulents, and very few evergreens. On the other hand there are of course no very large or thin leaves.

Most of the trees and shrubs bloom in spring and most of the herbs in late summer. Most of the woody plants and about one sixth of the species of herbs are wind pollinated. Most of the colored flowers are either white, yellow or purplish, and none of them are very large or noticeably odoriferous. Wind is naturally the chief agent of dissemination, but the scarcity of

FIG. 5. Scene near northeastern corner of the plain, about half way between Hicksville and Syosset, looking approximately ESE. The trees are *Quercus marylandica*. Oct. 20, 1907.

berries and the complete absence of burs, in a region so accessible to birds and mammals, is a little surprising.

The dry prairies just described cover something like 99 per cent of the area. The principal stream in the Plains is East Meadow Brook, which begins gradually, at an indefinite point varying with the wetness of the season, in one of the valleys about three miles east of Mineola and Garden City, flows nearly due south, and enters the woods about a mile from its source. Next in importance is Hempstead Brook, which flows right through the town of Hempstead. It takes its rise in a narrow strip of meadow just above the town, and its dry valley can be traced for a few miles to the northward. Still farther west there are one or two smaller streams similarly situated and bordered originally by similar vegetation, but now considerably encroached

upon by civilization. The wet meadow vegetation along these streams when viewed at a little distance does not differ much in aspect from that of the dry prairies, except that it is taller, many of the shrubs being as high as a man's head and the herbs knee-high. The species in the two habitats are of course almost entirely different, but their numbers happen to be about equal.

This prairie was originally bordered all around by forests, mostly of the oak type, but the border-line has been nearly everywhere obliterated by civilization. At some places south of Hicksville only a single row of fields at present intervenes between the prairie and the oak forest, but in most places the original boundary of the prairie could now hardly be determined within half a mile. Before the country was settled the oaks were presumably encroaching on the prairie from all sides. But in the few places where pine forests border the prairie I have never been able to determine which way the tension-line is tending to move.

The cause of the treelessness of prairies has probably been discussed in geological, semi-popular, and non-botanical literature more than any other strictly botanical problem, and perhaps even more than it has by botanists, but no explanation has yet been found to fit all cases. Some of the partial explanations which have been suggested for the well-known prairies of the upper Mississippi valley will apply as well to the one under consideration, and some will not.* In a paper of such limited scope as this it would be out of place to attempt to review all the prairie theories, or even to mention all who have speculated on the subject; and only the briefest summary can be given here.

Among the western prairie theories which will not apply on Long Island are deficient rainfall, extreme variations of temperature, and impervious subsoil. Our prairie is subject to a good deal of grazing, frequent fires, strong wind, and excessive evaporation, like the western ones, but these factors are the result rather than the cause of treelessness, so that they could hardly have

* The interesting papers of Shimek (Proc. Ia. Acad. Sci. 7: 47–59. *pl.* 4. 1900; Iowa Geol. Survey 20: 426–474. 1911; Bull. Lab. Nat. Hist. State Univ. Iowa 6: 169–240. *pl.* 1–14. April, 1911) and Gleason (Bull. Torr. Bot. Club 36: 265–271. 1909) should be examined in this connection.

determined the prairie in the beginning or fixed its present boundaries.

There are two suggestions that have been made with regard to the prairies of the Middle West which deserve more notice, though each leaves much to be explained. Alexander Winchell in 1864* summed up the opinions of most of his predecessors on the subject, indulged in some curious and perhaps not altogether essential observations on the vitality of buried seeds, and con-

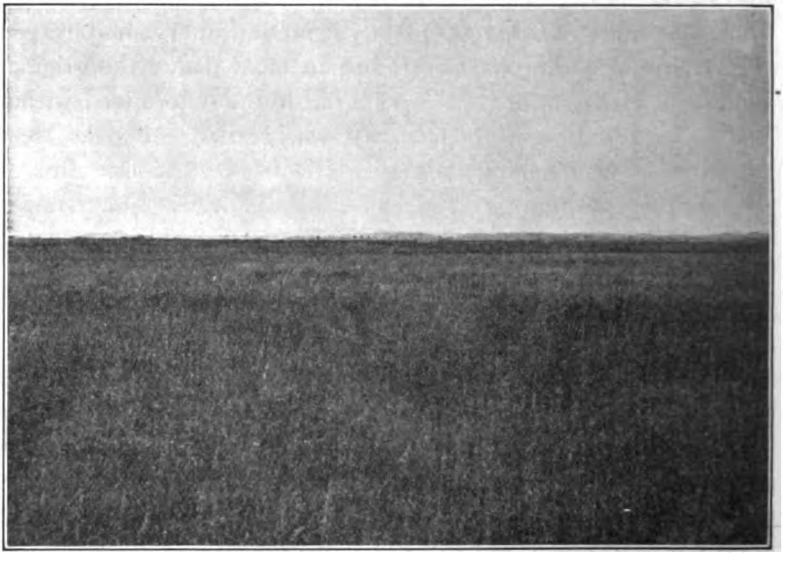

FIG. 6. About two miles east of Hempstead, looking north. Harbor Hill in distance, about 6 miles away. Sept. 27, 1907.

cluded that the "prairies were treeless because the grasses first gained foothold and then maintained it." The same idea has recently been expressed more elaborately by L. H. Harvey.† Prof. J. D. Whitney in 1876‡ distinguished between the arid plains toward the Rocky Mountains and the relatively humid prairies near the Mississippi River, showed the inadequacy of climatic theories to account for the latter, and pointed out that

* Am. Jour. Sci. **88**: 332–344, 444–445.
† Bot. Gaz. **46**: 86, 297. 1908.
‡ Am. Nat. **10**: 577–588, 656–667.

all such areas known to him were characterized by essentially horizontal strata, level surfaces, and finely divided soil. He distinguished between cause and effect, unlike some others who have written on the subject, but admitted his inability to show a causal relation between the conditions he described and the absence of trees. What he said about the topography and soil of the western prairies applies almost as well to those of Long Island* (which he probably knew nothing about), and even to some other kinds of treeless areas, such as wet meadows and salt marshes.

Although the prairies of Long Island are closely correlated with a certain type of soil, it is still an open question whether most of

FIG. 7. Looking up East Meadow Brook from the Farmingdale Road, running east from Hempstead. Aug. 25, 1909.

the peculiarities of prairie soil, here and elsewhere, may not be due to long occupation of the same ground by herbaceous vegetation. In its mechanical analysis, and even in its color, the "Hempstead loam" strikingly resembles the "Galveston clay" (an arbitrary name for a well-known type of soil, the salt marsh) described in the same government soil report; but it is probably

* Mechanical analyses of the "Hempstead loam" by the U. S. Soil Survey show that about 76 per cent of it consists of particles less than 1/20 of a millimeter in diameter, and that less than 3 per cent of it is in particles exceeding a millimeter.

a little too early to jump to the conclusion that the area in question was once a salt marsh while adjoining areas were not.

Not the least interesting fact about this unique insular coastal plain prairie is that so much of it is still in a state of nature, although it is situated in a county which has been settled for 250 years and has about 300 inhabitants to the square mile, and is all within the zone in which it is profitable to haul farm products to New York by wagon. This state of affairs is probably due to a combination of several more or less independent causes. Good crops are raised on the parts that are under cultivation, but the toughness of the sod, the thinness of the soil, and especially the scarcity of water, doubtless operate strongly to keep away new settlers unused to such conditions. That tradition has had a good deal to do with the preservation of the prairie is suggested by the following passage in the second edition of Thompson's History of Long Island (Vol. I, p. 29, 1843), which would be almost equally true today: "If the whole of this open waste was disposed of and inclosed in separate fields, the agricultural products of this portion of the island would be nearly doubled. A stupid policy, consequent upon old prejudices, has hitherto prevented any other disposition of it, than as a common pasturage. It is hoped the time is not far distant, when this extensive tract shall abound in waving fields of grain, yielding not only support, but profit, to thousands of hardy and industrious citizens."

Even if no more of this land were taken up in farms, the continued growth of New York City is bound to cover it all with houses sooner or later, and it behooves scientists to make an exhaustive study of the region before the opportunity is gone forever.

No one yet seems to have attempted seriously to enumerate, classify and explain the numerous and various treeless areas of eastern North America. If this were done perhaps other areas similar in character to the one described might be found. There are abundant hints of small prairies, open glades, natural meadows, etc., in early descriptive works dealing with parts of the country that are now pretty thickly settled, and many ex-

amples of them have doubtless already been effectually obliterated, and irrevocably lost to science.

NOTES ON THE FLORA OF NORTHAMPTON COUNTY, PENNSYLVANIA

By Eugene A. Rau

Having for a number of years studied the flora in the vicinity of Bethlehem and having made quite a large sized herbarium it was an agreeable surprise for me to notice Mr. King's Flora of Northampton Co., Pa., recently published in Torreya. In examining the list, however, I detected the omission of a number of plants which I had found at various times, and by reference to my herbarium desire to record the addition of the following together with the addition of a number of habitats.

Apparently much work still remains to be done in recording the flora in all parts of the county and designating the ranges of the various species. A thorough search will doubtless necessitate many additions to the list and thus relieve it of the too local character which it now bears.

Additions to Plants

Lycopodium lucidulum Michx. Hillsides along Monocacy, 1872.

Lycopodium complanatum L. Hillsides, Freemansburg, 1872.

Lycopodium obscurum L. On Lehigh Mt.

Equisetum fluviatile L. In shallow water, Lime Ridge, 1872.

Phegopteris hexagonoptera (Michx.) Fee. In woods, Lehigh Mt., 1871.

Asplenium platyneuron (L.) Oakes. In woods, Lehigh Mt., hillsides near Freemansburg, 1872; along the Bushkill creek, Easton, 1872.

Cystopteris bulbifera (L.) Bernh. On rocks near Illick's mill, 1898; along railroad cut near Bethlehem steel works, 1879.

Batrachium trichophyllum Chaix. Along the Saucon and Monocacy creeks.

Ranunculus obtusiusculus Raf. On small island in Lehigh River near Bethlehem.

Actaea alba (L.) Mill. In woods, Lehigh Mt., 1871.

Stylophorum diphyllum Nutt. In cultivated grounds, Bethlehem.

Phlox paniculata L. Low grounds near Hellertown, 1878.

Phlox pilosa L. Hexenkopf Hills, 1871; also along the Monocacy, 1869.

ADDITIONS TO RANGES

Selaginella apus (L.) Spring. Along the Monocacy, also near Seidersville, 1871.

Pellaea atropurpurea (L.) Link. On boulders near Illick's mill along the Monocacy, 1871; Jones' ledge along the Lehigh, 1876.

Matteuccia Struthiopteris (L.) Hoffman. On Chain Dam Island along the Lehigh near Easton, 1880.

Camptosorus rhizophyllus (L.) Link. On the rocks, Lehigh Mt., 1879; near Freemansburg, 1879; Lime ridge along the Lehigh, 1872.

Juniperus virginiana L. Hillside, Nisky Cemetery, Bethlehem.

Potamogeton perfoliatus L. Lehigh river, 1871.

Potamogeton crispus L. Saucon creek, 1872.

Vallisneria spiralis L. Lehigh river, Bethlehem.

Arisaema Dracontium (L.) Schlott. Along the Monocacy.

Ornithogalum umbellatum L. Seminary grounds near the Monocacy.

Cypripedium hirsutum Mill. Near Illick's Mill, Monocacy creek.

Hicoria glabra (Mill.) Britton. Nisky, Bethlehem, reported by C. N. Lochman.

Corylus rostrata Ait. Lehigh Mt., 1869, and along the Monocacy, 1871.

Corylus americana Walt. Fence corners along the Monocacy, C. N. Lochman.

Fagus americana Sweet. Along the Monocacy.

Quercus macrocarpa Michx. Formerly found near Nazareth from which place several trees were transplanted to Nisky Cemetery, Bethlehem.

Urtica gracilis Ait. Along the Lehigh, 1871.

Celtis occidentalis L. Cultivated and waste grounds, Bethlehem, 1871.

Sagina procumbens L. In streets, Bethlehem, 1891, 1912.

Caltha palustris L. Is rather common in low grounds along streams while *Trollius laxus* Salisb. is rare and local in the southern part of the county.

Atragene americana Sims. Hexenkopf hills, Williams Twp., 1871.

Bicuculla Cucullaria (L.) Millsp. Lime Ridge, 1868.

Draba verna (L.). Cultivated grounds, Bethlehem; also near Freemansburg, 1870.

Hamamelis virginiana L. Along the Monocacy.

Gleditsia triacanthos (L.). Cultivated grounds and Sand Island, Bethlehem.

Vicia americana Michx. Lime Ridge, 1870; near Freemansburg, 1872.

Polygala Senega (L.). Near Leithsville, 1880.

Viola pedata (L.). Lehigh Mt. and Lime Ridge, 1871.

Epigaea repens (L.). Hills near Freemansburg, 1866; also Lower Saucon Twp., 1899.

Gentiana crinita Froel. Near Illick's Mill, Monocacy, 1871 to 1879; swampy ground near Easton, E. A. Rau, in meadows near Hellertown; reported by C. N. Lochman.

Convolvulus arvensis L. College Hill, Easton, 1872, E. A. Rau; waste places, Bethlehem, C. N. Lochman, 1912.

Trichostema dichotomum L. Roadsides, Seidersville, 1877.

Solanum nigrum L. Sand Island, 1871, along the canal, 1874.

Dasystoma Pedicularia (L.) Benth. In woods along Monocacy, 1870.

Gerardia tenuifolia Vahl. In woods along the Monocacy, 1875.

Melampyrum lineare Lam. In woods, Lehigh Mt.

Leptamnium virginianum (L.) Raf. In beech woods, Monocacy, 1873–1879.

Galium circaezans Michx. Hexenkopf Hills, 1871; Nisky Hill and along the Monocacy, 1871.

Galium asprellum Michx. Nisky Hill, 1871.

Galium Aparine L. Nisky Hill, 1871.

Hieracium pilosella L. Cultivated grounds, Bethlehem.

A TRICARPELLARY WALNUT*

By William H. Lamb

A tricarpellary walnut is one that is separable into three divisions. In general walnuts are bicarpellary, but tricarpellary forms do occur, especially in our so-called "English walnut," *Juglans regia* L. The accompanying sketch shows an end view and diagrammatic cross section of one of these interesting forms.

The term "English walnut," by the way, is a misnomer, for *Juglans regia* is not a native of England at all. It is extensively cultivated in England and on the continent, but is native to southeastern Europe, Greece, Asia Minor, and China. It has been more properly called "Persian walnut."

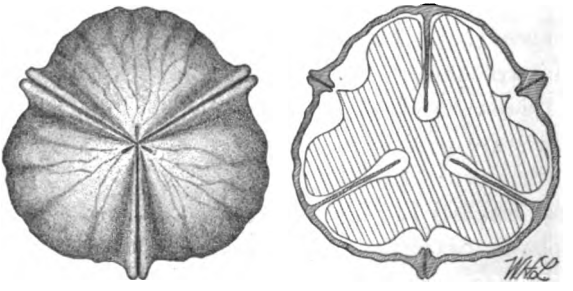

FIG. 1. End view, natural size, and diagrammatic cross section of a tricarpellary walnut (*Juglans regia* L.).

Before discussing the significance of a tricarpellary walnut, it might be well to consider just what a walnut is. A walnut is not a fruit. Indeed it is an interesting fact that no species of *Juglans* bears edible fruit. The fruit proper is a bitter, green or black, more or less fleshy drupe. It contains the walnut, just as a peach contains a large seed. If we were to throw away the fleshy part of the peach and retain the stone as a delicacy, we would be doing precisely what is done in the case of the walnut. The edible portions of a walnut are the large cotyledons.

These cotyledons are deeply lobed in consequence of an in-

* Published by permission of the Secretary of Agriculture. See also Torreya 8: 136. 1908.—Ed.

complete septation of the cavity of the ovary. That is, the seed is divided internally by a false partition which does not completely separate the cavity into two parts, and the cotyledons are lobed and wrinkled to fit into the irregularities of the inner surface of the seed. The English walnut, then, though morphologically bicarpellary, contains but one ovule; *i. e.*, it is morphologically a true nut (one-seeded pericarp resulting from a several carpelled gynoecium).

Now what we would expect to find in a case of reversion would be a form in which this division of the ovary was complete, forming by this septation a true bicarpellary ovary, but in this specimen we find a reversion to a type in which there are three incomplete septa in the ovary, forming a nut which is separable into three parts, but which contains but one ovule, with three cotyledons. This is probably due to the fact that the reduction of the ovary in the *Juglandaceae* has been carried so far that the ovule has become basal and erect, and a complete septation of the ovary is prevented by the obstruction of the hypocotyl or upright stalk which supports the cotyledons.

PROCEEDINGS OF THE CLUB

October 8, 1912

The meeting of October 8, 1912, was held at the American Museum of Natural History. Dr. E. B. Southwick called the meeting to order at 8:30 P.M. Eight persons were present.

The minutes of May 29 were approved.

Mr. Henry O. Severance, librarian of the University of Missouri, Columbia, Missouri, and Mr. Otto Kunkel, Columbia University, New York City, were nominated for membership.

Mr. Sereno Stetson, chairman of the field committee, and Dr. E. B. Southwick reported on the field meetings held during the summer.

The application of Miss Jean Broadhurst for a grant of two hundred dollars from the Esther Hermann Fund to assist her

in carrying on her studies on the bacteria of the milk supply was approved.

The secretary read a communication from the Rice Institute of Texas inviting the president of the Torrey Club to be present at the dedicatory services of their new building.

The scientific program consisted of informal reports by various members on the collections made during the summer.

Professor R. A. Harper spoke of having collected a number of species of *Boleti* from the vicinity of Woods Hole, Massachusetts.

Mr. Stetson mentioned several expeditions which he had conducted at Copake Falls and among the hills of Connecticut.

Dr. Tracy Hazen gave a short account of his botanical investigations in Connecticut, and Dr. Southwick mentioned the work he had been doing along the line of establishing school gardens.

Dr. M. A. Howe reported progress on his work on the marine algae.

The secretary read a communication from David R. McCord, asking for information regarding the particular species of corn originally grown by the American Indians.

Meeting adjourned.

B. O. DODGE,
Secretary

NEWS ITEMS

Dr. E. D. Clark, one of the editorial board of the Torrey Club, has been appointed instructor in chemistry at the Cornell Medical College, where he will continue work on phyto-chemical problems.

The Royal Bavarian Academy of Science has awarded its medal of merit to Dr. C. C. Hosséus for his work on the flora of Siam.

A course of lectures on cryptogamic botany will be given this winter by Professor A. Vincent Osmun, of the Massachusetts Agricultural College, at the Museum of Natural History, Springfield, Mass. A similar course in general botany was conducted

by Professor Osmun last winter. These lectures are free to the public.

A statement in *Science* early last summer to the effect that the *Flora brasiliensis* was to be found only at the University of Illinois, Harvard, Columbia and the Missouri Botanical Garden has been widely copied. Final returns indicate that this valuable work is also in the following libraries: Parke Davis & Co., at Detroit, Academy of Natural Sciences at Philadelphia, Ohio State University, Peabody Library and the library of Captain John Donnell Smith both at Baltimore, and at the Library of Congress.

The University of Florida and the Florida Agricultural Experiment Station were honored by a visit from Prof. Hugo de Vries in October. After spending a week at this institution he left for a visit to the Keys along the Over Sea Railroad between Miami and Key West. During his Florida exploration Professor de Vries was accompanied by Dr. J. K. Small, of the New York Botanical Garden and Dr. P. H. Rolfs.

Dr. H. S. Reed, of the Virginia Polytechnic Institute, will sail for Italy early in January. He will spend some time at the Zoölogical Station in Naples and carry on some work in one of the German universities during the summer semester.

Dr. A. M. Ferguson, of Sherman, Texas, has a collection of Texas plants, in quantity, for making up into fasicles. Any one interested in the naming, arranging and sale of such material should write to him.

Dr. N. L. Britton, accompanied by Mr. Stewardson Brown, of the Academy of Natural Sciences of Philadelphia, sailed for Bermuda on November 27 to continue their studies on the flora of that island. Dr. F. J. Seaver has gone with the party to study the fungi of the island. The expedition will sail for New York on December 16.

We learn from *Science* (November 15) that Professor M. L. Fernald, of the Gray Herbarium, delivered a lecture at Chicago, before the Geographical Society, on November 8 on "The

Mountains and Barrens of Newfoundland and the Gaspé Peninsula."

Dr. Herbert J. Webber, of Cornell University, has returned from an extensive trip in the West, where he has been delivering lectures. He spent some time at the University of California, where he was offered the post of director of the citrus experiment station and Dean of the Graduate School of Tropical Agriculture. He has not decided whether he will accept the position.

On Monday, November 25, Rutgers College heard a lecture on the Luther Laflin Kellogg Foundation by Professor Hugo de Vries, director of the Hortus Botanicus at Amsterdam, Holland. Professor de Vries discussed "A New Conception of the Evolution Theory." Professor de Vries while making a study of the botany of Florida visited Crescent City where extensive citrus groves in full bearing were examined. In the region around Satsuma he visited the 700-acre camphor orchard, this being of special interest to him from the fact that the trees are all seedlings from seed gathered in Florida.

From *Science* (November 22) we learn that Doctor Jacques Huber, director of the Goeldi Museum of Natural History and of the Botanical Garden of Pará, Brazil, has been visiting the scientific institutions of the United States.

Mr. Henry Groves, who with his brother, Mr. James Groves, is the author of important contributions to botany, died in London on November 2, aged fifty-seven years.

At Cleveland, December 30–January 4, the American Association for the Advancement of Science will hold its annual meeting. Dr. C. E. Bessey, the retiring President, will introduce the President of the present meeting, Dr. E. C. Pickering. The botanical section, G, will hear the vice-presidential address of Professor Newcombe on "The scope of state natural surveys." Botanical societies meeting at Cleveland during the same week include, The Botanical Society of America, Botanists of the Central States, American Phytopathological Association and the Association of Official Seed Analysts.

From the *Evening Post* (November 23) we learn that the post of research assistant on the staff of the Missouri Botanical Garden, made vacant by the resignation of Dr. R. R. Gates, has been filled by Dr. George R. Hill, who received his undergraduate degree from the Utah Agricultural College. Miss Margaret De Merritt, of New Hampshire College; A. R. Davis, of Pomona College; L. O. Overholz, of Miami University; J. S. Cooley, of Randolph-Macon College and Virginia Polytechnic and W. H. Emig, of Washington University, are the Rufus J. Lackland research fellows in the Henry Shaw School of Botany during the present year.

H. E. Stevens, pathologist to the Florida Experiment Station, has definitely established, according to Professor P. H. Rolfs, the fact that *Phomopsis Citri* Fawcett is the causative agent of melanose in *Citrus* trees.

Dr. Wilhelm Miller, for many years editor of *Country Life in America*, and co-editor with L. H. Bailey of the *Cyclopedia of American Horticulture*, has severed his connection with Doubleday, Page and Company to accept the position of Assistant Professor of Landscape Architecture at the University of Illinois.

Mr. W. G. Stover, recently at the Oklahoma Agricultural College, has been appointed instructor in botany at the Ohio State University, Columbus, Ohio.

Nevada S. Evans, graduate of the University of Minnesota and expert in the seed laboratory of Northrup, King & Co., has accepted the position of Assistant Botanist in the North Dakota Agricultural Experiment Station, and will report for work in the Pure Seed Laboratory of that institution December 1.

Professor E. S. Reynolds, of the University of Tennessee, Knoxville, has accepted the position of Associate Professor of Botany at the North Dakota Agricultural College. Mr. Reynolds took up his new work at the Agricultural College, November 1.

A hundred Kny charts have just been added to the botanical equipment of Baylor University, Waco, Texas.

We learn from the *Times* (December 5) that Dr. William Armstrong Buckhout, Professor of Botany and Horticulture at the Pennsylvania State College, and one of the oldest members of the faculty, died in Philadelphia on Tuesday, December 3, at the age of 61 years. He was a Fellow of the American Association for the Advancement of Science and of many other scientific societies. Dr. Buckhout had held a professorship since 1871.

A. Anstruther Lawson (Ph.D. Chicago, 1902), who has been a member of the botanical staff of Stanford University, and, more recently, of the University of Glasgow, has been appointed professor of botany in the University of Sydney, New South Wales.

INDEX TO VOLUME XII

New names and the names of new genera and species are printed in **boldface type.**

The Torrey Botanical Club

Contributors of accepted articles and reviews who wish six gratuitous copies of the number of TORREYA in which their papers appear, will kindly notify the editor when submitting manuscript.

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(3) **The Preliminary Catalogue of Anthophyta and Pteridophyta** reported as growing within one hundred miles of New York, 1888. Price, $1.00.

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